

The Jamaican root tonics: a botanical reference

Sylvia A Mitchell

Abstract

An important part of Jamaica's ethnomedical heritage is its root tonics. These tonics are deep decoctions of barks, leaves and roots of forest species, which are consumed mainly to build strength and vitality. The objective of this article has been to gather information on a sample of Jamaican root tonics in order to provide further understanding about these tonics and also to establish a botanical reference to the plants used. Information was elicited by: (1) folk medicine questionnaires and interviews; (2) study of 38 indigenous root tonics; and (3) literature searches for similar Caribbean tonics. Jamaican root tonics are made mainly by men in rural communities. Botanical analysis of 38 indigenous root tonic drinks indicates that *Smilax balbisiana* (chainy root; used in 100% of tonics), *S. regelii* (sarsaparilla; 94.7%), herbs covered by the common name 'strong back' which included *Desmodium canum*, *Cuphea parsonsia* and *Morinda royoc* (94.6%), *Iresine diffusa* (nerve wist; 57.9%), *Trophis racemosa* (ramoon; 57.9%), *Alysicarpus vaginalis* (medina; 55.3%) and *Zingiber officinale* (ginger; 50.0%) are the most commonly used plants. A total of 24 plants was used in 20–100% of root tonics, with 70 other plant species making up the balance. Between three and 26 plants, with an average of 13.3 plants, were used in each root tonic. Since chainy root is endemic to Jamaica, these root tonics are uniquely Jamaican. Although a wide variety of plants are used in Jamaican root tonics, the method of making the tonics is the same. This is the first scientific documentation of Jamaican root tonics, and an important first step towards validating their efficacy and safety.

Keywords

Jamaica • nutraceutical • root tonics • *Smilax balbisiana* (chainy root) • *S. regelii* (sarsaparilla)

Introduction

Jamaica has a high plant biodiversity [including 2888 flowering plant species, of which 784 (27%) are endemic],¹ with many plants being used for economic purposes including folk medicine (334 medicinal plants identified)² and as ingredients in several commercially available health and wellness products.^{2–5} Jamaica's plant biodiversity is a rich mixture of endemic (i.e. found only in Jamaica), indigenous (i.e. originally derived from Jamaica but now found elsewhere), native (i.e. imported by Tainos) and introduced plants (i.e. imported by Europeans, Africans, Indians and Asians).^{4,5}

In Jamaica, forest species with economic potential have been identified (this list is in no way exhaustive; for scientific plant names, please see Tables 1 and 2):

- Herbs and spices (fresh or dried): *Ocimum basilicum*, *O. micranthum* Willd. (basil), Jamaican ginger, nutmeg, pimento, *Capsicum chinense* Jacq. (hot pepper), *Curcuma longa* L. (turmeric).
- Wellness botanicals (aromatherapy/fragrances/massage oils/sprays): *Cymbopogon citratus* (DC.) Stapf, *C. flexuosus* (Nees ex Steud.) Will. Watson (lemon grass), pimento, Jamaican rosemary, *Coffea arabica* L. (coffee), *Pimenta racemosa* (P. Mill.) JW Moore (West Indian bay tree).

Table 1 Plants listed as an ingredient in 20–100% of 38 Jamaican root tonic bottles collected^a

Ref no.	Common names ^b	Scientific name and authority	Family	Herbarium reference voucher numbers ^c	Percentage (n/38x100) of bottles on which the plant is listed as an ingredient	Part used in root tonics ^d
1	Chainy root, chainey, channy, chainie root chainy wiss, chainy wist	<i>Smilax balbisiana</i> Kunth	Smilacaceae	IJ-75527, UCWI-31309	100 (38/38)	Root (rhizome)
2	Sarsaparilla	<i>Smilax balbisiana</i> Kunth	Smilacaceae	IJ-75527, UCWI-31309	10.5 (4/38)	Wist (vine ± leaves)
3	Strong back (broad leaf)	<i>Smilax regelli</i> Killip & C.V. Morton (<i>Desmodium canum</i> (J.F. Gmel.) Schinz & Thell.)	Smilacaceae Leguminosae	IJ-66306, UCWI-30823 IJ-56323, UCWI-30738, UCWI-28376	94.7 (36/38) 76.3 (possibly <i>D. canum</i> , <i>C. parsonsia</i> or <i>M. royoc</i>) (29/38)	Roots Root/bush
4	Strong back (<i>C. parsonsia</i>), fine leaf strong back	<i>Cuphea parsonsia</i> (L.) R.Br ex Steud.	Lythraceae	IJ-12219, UCWI-31254	2.6% (<i>C. parsonsia</i>) (1/38)	Root/bush
5	Strong back (<i>M. royoc</i>), courage root, Yellow root, Yellow wisp	<i>Morinda royoc</i> L.	Rubiaceae	IJ-82328, UCWI-21513, Adams-12253	15.7 (6/38)	Root, wist
6	Nerve wist/wiss/whist/ wisp/whisp , jubba bush	<i>Iresine diffusa</i> Humb. & Bonpl. ex Willd.	Amaranthaceae	IJ-82258, UCWI-33578, P.Lewis-166	57.9 (22/38)	Wist (main woody stem ± leaves)
7	Ramoon, ramon, raw moon	<i>Trophis racemosa</i> (L.) Urban	Moraceae	IJ-6622, IJ-26890	57.9 (22/38)	Leaves, bark
8	Medina, madine	<i>Alysicarpus vaginalis</i> (L.) DC	Leguminosae	IJ-21699, UCWI-21922, Adams-11760	55.3 (21/38)	Bush (leaves and stems)
9	Ginger	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	IJ-23863, IJ-18666, Harris-8830	50.0 (19/38)	Root (rhizome)
10	Pimento	<i>Pimenta dioica</i> (L.) Merr	Myrtaceae	IJ-23954, Harris-10507	47.4 (18/38)	Bark , seeds
11	Coconut, red coconut	<i>Cocos nucifera</i> L.	Areacaceae	IJ-76547a,b&c	39.5 (15/38)	Root, young fruit
12	Fourman strength	<i>Stermodia maritima</i> L.	Scrophulariaceae	IJ-30877, UCWI-24234, Adams-5667	36.8 (14/38)	Stem
13	Blood wist/wiss/whist/ wisp	?	?	?	36.8 (14/38)	Wist (main woody stem)
14	Breadnut	<i>Brosimum alicastrum</i> Sw.	Moraceae	IJ-44025, UCWI-22718, Adams-8339	34.2 (13/38)	Bark, leaf
15	All man strength, all man , monkey comb	<i>Pithecoctenium echinatum</i> (Jacq.) Baill.	Bignoniaceae	IJ-50835, IJ-22365, UCWI-21743, Adams-9433	28.9 (11/38)	Bark
16	Manback	Possibly <i>Desmodium adscendens</i> , <i>D. canum</i> or maybe <i>Stylosanthes viscosa</i>	?	?	24.0 (unknown) (9/38) + 2.6% (<i>D. canum</i>) (1/38) + 2.6% (<i>Stylosanthes viscosa</i>) (1/38)	?
17	Peanuts , ground nut	<i>Arachis hypogaea</i> L.	Leguminosae	IJ-59210 a&b, UCWI-3441, Johnston-22	28.9 (11/38)	Raw peanuts, peanut skin, root
18	Blackberry, berries , bramble	<i>Rubus jamaicensis</i> Blanco	Rosaceae	IJ-82352, UCWI-25810, Morley-129	26.3 (10/38)	Leaves, berries
19	Black raspberry	<i>R. racemosus</i> Roxb.	Rosaceae	IJ-71243, UCWI-22887, Adams-10643		
20	Red raspberry	<i>R. rosifolius</i> Sm. ex Baker	Rosaceae	IJ-21685, UCWI-35352, P.Lewis741		
21	Green wist/wiss, giant wisp/wist , Green withe	<i>Vanilla claviculata</i> (W. Wright) Sw.	Orchidaceae	IJ-4219, IJ47516, Harris-10411	23.7 (9/38)	Wist (green vine)
22	Banana	<i>Musa acuminata</i> Colla	Musaceae	L.Wynter-5627	23.7 (9/38)	Root, young fruit
23	Sage	<i>Salvia officinalis</i> L. or possibly <i>Lantana camara</i>	Lamiaceae	NVS	23.7 (9/38)	Leaves
24	Iron weed , elephant foot	<i>Elephantopus mollis</i> Kunth	Asteraceae	IJ-13948, UCWI-23152, Adams-12655	21.0 (8/38)	Bush

^aData for this table were obtained from the labels of 38 root tonic bottles, which were randomly collected throughout Jamaica by the Jamaican Forestry Department. Common names, scientific names and authorities were drawn from reference sources^{1,22-25} and herbarium voucher specimens.

^bThe preferred common name is underlined. Names listed in bold are those mentioned on the product label.

^cHerbarium voucher numbers: IJ = Institute of Jamaica, UCWI = University College of the West Indies. Other titles reflect the names of the plant collectors at the UCWI herbarium. NVS = no voucher specimen.

^dPlant parts listed in bold are the parts used as stated on the product label. Plants not listed in bold are the most reasonable plant parts used in root tonics as determined by the outcomes of this study. Bush = leaves and stem; wist = vine, main woody stem of small trees, or liana ± leaves; stick = small woody branch.

Table 2 Plants listed as an ingredient in 0–19 of 38 Jamaican root tonics collected

Ref no.	Common name ^b	Scientific name and authority	Family	Herbarium reference voucher numbers ^c	Percentage (<i>n</i> /38x100) of bottles on which the plant is listed as an ingredient	Part used in root tonics ^d
25	Almond	<i>Terminalia catappa</i> L.	Combretaceae	IJ-10404, UCWI-28102, Adams-13024	2.6 (1/38)	?
26	Barley	<i>Hordeum vulgare</i> L.	Poaceae	NVS	2.6 (1/38)	Roasted seeds
27	Basida, baceda , bastard cedar	<i>Guazuma ulmifolia</i> Lam.	Malvaceae	IJ-81163 & IJ-81123, UCWI-30069, M.duQuesnay-666	5.3 (2/38)	Bark
28	Birch , red birch, red man bark	<i>Bursera simaruba</i> (L.) Sarg.	Burseraceae	IJ-9685, UCWI-27502, Adams-12363	5.3 (2/38)	Bark
29	Cola bark , <u>bissy</u>	<i>Cola acuminata</i> (P. Beauv.) Schott & Endl.	Malvaceae	IJ-4903a&b, UCWI-30868	2.6 (1/38)	Bark
30	Block wist, water wist , wild grape	<i>Vitis tiliifolia</i> Humb. & Bonpl.	Vitaceae	IJ-24815, IJ-22383, UCWI-21362, Adams-9307	5.3 (2/38)	Wist
31	Brial wist/whist, bryal wisp, brain wist, briac roots	?	?	?	13.2 (5/38)	Wist, roots
32	Budge plum	?	?	?	2.6 (1/38)	Plum
33	Bull wist	?	?	?	2.6 (1/38)	Wist
34	Gold wist	?	?	?	2.6 (1/38)	Wist
35	Cashew	<i>Anacardium occidentale</i> L.	Anacardiaceae	IJ-60084, UCWI-23109, Adams-10307	18.4 (7/38)	Bark
36	Cherry	?	?	?	2.6 (1/38)	Bark
37	Chew stick	<i>Gouania lupuloides</i> (L.) Urb.	Rhamnaceae	IJ-27296, IJ-21942, UCWI-23048, Adams-6198	10.5 (4/38)	Stick (young branch)
38	Chiganille , <u>chigger nut</u> , jigger nit	<i>Tournefortia hirsutissima</i> L. or <i>Tournefortia volubilis</i> L.	Boraginaceae	IJ-32849, UCWI-21821, Adams-10149	2.6 (1/38)	?
39	Cinnamon	<i>Cinnamom zeylanicum</i> Nees.	Lauraceae	IJ-19655, UCWI-35317, P.Lewis-711	10.5 (4/38)	Leaves
40	Cockish root	?	?	?	2.6 (1/38)	Root
41	Cocky stick	?	?	?	2.6 (1/38)	Stick (young branch)
42	Cocky wiss	?	?	?	2.6 (1/38)	Wiss (main woody stem ± leaves)
43	Comfrey	<i>Symphytum officinale</i> L.	Boraginaceae	M-051, UCWI-35331	2.6 (1/38)	?
44	Cow gut whist	?	?	?	2.6 (1/38)	Wist
45	Custard apple, apple bark	<i>Annona reticulata</i> L.	Annonaceae	IJ-82278, IJ-55462, UCWI-27545	2.6 (1/38)	Apple (fruit)
46	Dandelion	<i>Cassia occidentalis</i> (L.) Rose	Leguminosae	IJ-10401, UCWI-30715	2.6 (1/38)	Bark
47	Dog blood , inflammation weed	<i>Rivinia humilis</i> L.	Phytolaccaceae	IJ-17674, UCWI-35373	15.7 (6/38)	Root
48	Donkey weed , cheesy toes, pencil flower	<i>Stylosanthes hamata</i> (L.) Taub.	Leguminosae	IJ-51986, UCWI-35436	2.6 (1/38)	?
49	Duppy gun, jah gun , menow weed, Jamaica ginseng	<i>Ruellia tuberosum</i> L.	Acanthaceae	IJ-40027, UCWI-21004, Adams-10180	10.5 (4/38)	Weed (stem and leaves)
50	Eleven strength	?	?	?	13.1 (5/38)	Root
51	Five finger wiss	<i>Syngonium auritum</i> (L.) Schott.	Araceae	IJ-21423, UCWI-22136, Adams-10289	2.6 (1/38)	?
52	God bush , mistletoe, scorn-the-earth	<i>Oryctanthus occidentalis</i> (L.) Eichler	Loranthaceae	IJ-38324, UCWI-23772, Adams-11000	7.9 (3/38)	Wiss
53	Guava	<i>Psidium guajava</i> L.	Myrtaceae	IJ-5012	13.2 (5/38)	Bush (the whole plant)
54	Hops	<i>Humulus lupulus</i> L.	Cannabaceae	NVS	2.6 (1/38)	Root
55	Hug-mi-tight	<i>Polypodium exiguum</i> Heward	Grammitidaceae	NVS	10.5 (4/38)	?
56	Irish mash , Irish moss	<i>Gracilaria</i> spp.	Gracilariaceae	It is not clear what species was used	7.9 (3/38)	?
57	Jack in the bush , Christmas bush	<i>Eupatorium odoratum</i> L.	Compositae	IJ-25718, UCWI-8504, Adams-6096	2.6 (1/38)	Whole plant
58	Jacky mi saddle , Jackie Saddle	<i>Peperomia amplexicaulis</i> (Sw.) A. Dietr.	Piperaceae	IJ-36107, UCWI-27571, Adams-12809	5.2 (2/38)	Bush (stems and leaves)
59	Liquish bush	?	?	?	2.6 (1/38)	Bush
60	Linseed	<i>Linum usitatissimum</i> L.	Linaceae	NVS	5.2 (2/38)	Seed
61	Mint	It is not clear what type of mint was used	?	?	2.6 (1/38)	?
62	Mountain coco, rock cocoa , wild coco, Junction	<i>Anthurium grandifolium</i> (Jacq.) Kunth	Araceae	IJ-56224, UCWI-22157, Adams-7802	10.5 (4/38)	Root
63	Naseberry	<i>Manilkara zapota</i> (L.) van Royen	Sapotaceae	IJ-33427, UCWI-24343, Adams-10915	5.2 (2/38)	Bark

Table 2 Continued

Ref no.	Common name ^b	Scientific name and authority	Family	Herbarium reference voucher numbers ^c	Percentage (n/38x100) of bottles on which the plant is listed as an ingredient	Part used in root tonics ^d
64	Nettles , stinging nettle	<i>Urtica dioica</i>	?	?	2.6 (1/38)	?
65	Noni	<i>Morinda citrifolia</i> L.	Rubiaceae	IJ-5179, UCWI-28452, M.duQuesnay-7	2.6 (1/38)	?
66	Nutmeg	<i>Myristica fragrans</i> Houtt.	Myristicaceae	IJ-35074, UCWI-33231	2.6 (1/38)	Nut
67	Pepper elder , rat ears	<i>Peperomia pellucida</i> (L.) Kunth	Piperaceae	IJ-30436, UCWI-35360, P.Lewis-743	7.9 (3/38)	?
68	Perina, perana, puron, puran, preen proani chip , pruan tree, prune tree	<i>Prunus occidentalis</i> Sw.	Rosaceae	IJ-60011, UCWI-31217	18.4 (7/38)	Bark
69	Poor man friend, Poor man strength	<i>Stylosanthes viscosa</i>	Leguminosae	?	7.9 (3/38)	?
70	Puppy stiff	?	?	?	2.6 (1/38)	?
71	Ram goat dash-a-long , Ram goat National	<i>Turnera ulmifolia</i> L.	Passifloraceae	IJ-81890, UCWI-23337, Adams-6668	2.6 (1/38)	?
72	Red budge	?	?	?	2.6 (1/38)	?
73	Rock rose , Jamaican rosemary	<i>Croton linearis</i> Jacq.	Euphorbiaceae	IJ-36255, UCWI-29722, Tulloch-73	2.6 (1/38)	Stem and leaves
74	Root	<i>Desmodium axillare</i>	Leguminosae	?	2.6 (1/38)	Root
75	Rosemary, Rose Mary	<i>Rosmarinus officinalis</i> L. or <i>Croton linearis</i> Jacq.	Lamiaceae	UCWI-31188	10.5 (4/38)	Stem and leaves
76	Royal wiss	?	?	?	13.2 (5/38)	Wiss
77	Sassafras	<i>Sassafras albidum</i> (Nutt.) Nees.	?	NVS	5.3 (2/38)	?
78	Search-mi-heart	<i>Rhytidophyllum tomentosum</i> (L.) Mart.	Gesneriaceae	IJ-3700, UCWI-35180, P.Lewis-611	10.5 (4/38)	?
79	Shama macka , shame weed, shame-mi-macka, shame mi lady	<i>Mimosa pudica</i> L.	Leguminosae	IJ-78031, UCWI-9684, Adams-8348	2.6 (1/38)	?
80	Sibble Jack , supple Jack	<i>Paullinia barbadensis</i> Jacq.	Sapindaceae	UCWI-23001, Adams-8899	2.6 (1/38)	?
81	Slippery elm	<i>Ulmus rubra</i> Muhl.	Ulmaceae	NVS	2.6 (1/38)	?
82	Snake wist/wisp , Snake withe, Pudding Withe	<i>Cissus sicyoides</i> L. (or possibly <i>D. polygonoides</i> , Ref# 94)	Vitaceae	IJ-56306, IJ-6279, UCWI-30146, P.Scott-298	7.9 (3/38)	Wist
83	Soursop	<i>Annona muricata</i> L.	Annonaceae	IJ28700, UCWI-21038, Adams-8233	15.8 (6/38)	Young fruit, leaf, bark
84	Tamarind	<i>Tamarindus indica</i> L.	Caesalpinaceae	IJ-82802, UCWI-33314	2.6 (1/38)	?
85	Tan de buddy, man buddy , John Crow nose	<i>Scybalium jamaicense</i> (Sw.) Schott & Endl	Belanophoraceae	IJ-24887, UCWI-33512, P.Lewis-145	5.3 (2/38)	?
86	Tan pon rock, male fern	<i>Dryopteris filix-mas</i> (L.) Schott.	Dryopteridaceae	P-3930	10.5 (4/38)	?
87	Tea	<i>Camellia sinensis</i> (L.) Kuntze	Theaceae	UCWI-25042, Adams-8784	2.6 (1/38)	Leaves and root
88	Three man strength	?	?	?	5.3 (2/38)	?
89	Tuna (smooth)	<i>Opuntia cochenillifera</i> (L.) Mill.	Cactaceae	IJ-6682, UCWI-35479	5.3 (2/38)	?
90	Vervain , Vervine, Porter weed	<i>Stachytarpheta jamaicensis</i> (L.) Vahl	Verbenaceae	IJ-28361, UCWI-30798	5.3 (2/38)	?
91	White oak bark , Quebec Oak	<i>Quercus alba</i> L.	Fagaceae	UCWI-33202 (<i>Quercus</i> sp.)	2.6 (1/38)	Bark
92	Woman back, woman wood	<i>Oreopanax capitatus</i> (Jacq.) Decne & Planch.	Araliaceae	IJ-70169, UCWI-35112	7.9 (3/38)	Wood (bark)
93	Wood root	Possibly root of <i>O. capitatus</i> (Ref no. 92)	?	?	2.6 (1/38)	Root
94	Yam , wild yam, bitter Jessie	<i>Dioscorea polygonoides</i> Humb. & Bonpl. Ex Willd.	Dioscoreaceae	IJ-32705 a&b, UCWI-21473, Adams-6506	2.6 (1/38)	?

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^bThe preferred common name is underlined. Names listed in bold are those mentioned on the product label.

^cHerbarium voucher numbers: IJ = Institute of Jamaica, UCWI = University College of the West Indies, M = special medicinal collection of the Institute of Jamaica, P = pteridophyte collection of the IOJ. Other titles reflect the names of the plant collectors at the UCWI herbarium; NVS = no voucher specimen.

^dPlant parts listed in bold are the parts used as stated on the product label. Plants not listed in bold are the most reasonable plant parts used in root tonics as determined by the outcomes of this study. Bush = leaves and stem; wist = vine, main woody stem of small trees, or liana ± leaves; stick = small woody branch.

- Cosmeceuticals (soaps, lotions, creams): *Aloe vera* (L.) Burm.f. (aloe), lemon grass, *Morinda citrifolia* L. (noni), pimento.
- Tea plants (tea bags, powder, drinks): *Satureja viminea* L. (Jamaican peppermint), *Lippia alba* (Mill.) N.E. Brown (colic mint), *Hibiscus sabdariffa* L. (sorrel), ginger, lemon grass, cinnamon, *Picrasma excelsa* (Sw.) Planch. (bitterwood), coffee.
- Nutraceutical plants: *Ananas comosus* (L.) Merr. (pineapple), noni, sorrel, *Moringa oleifera* Lam. (moringa), fruit drinks; root tonics (including sarsaparilla, chainy root, medina, strong back and ramoon).
- Medicinal plants: *Momordica charantia* Descourt. (cerassee), *Petiveria alliacea* L. (guinea hen weed), *Annona muricata* L. (soursop), aloe, *Psidium guajava* (guava).
- Craft plants (craft, furniture): flowers such as orchids and bromeliads, *Philodendron lacerum* (Jacq.) Schott (wicker).

All the above plants (and more) are sold in Jamaica in a variety of forms, including whole plants (e.g. potted plants), fresh plant material (e.g. barks, rhizomes, culinary herbs), dried plant material (e.g. powdered spices, tea bags) and processed products (e.g. root tonics, liquors, herbal wines, soaps, lotions, creams, massage oils, sprays and candles). The following products made from Jamaican-grown plants are less common: capsules, tinctures, essential oils and phytopharmaceuticals. For most product lines, there is much room for growth both locally and for export.⁵ A lot of the raw material for these natural products are non-timber forest plants, which can be a sustainable and environmentally friendly way for forest communities to safely gain wealth.^{6,7}

Jamaica's folk medicine is heavily skewed towards the use of infusions (i.e. seeping plant material in boiled water) and decoctions (i.e. boiling plant material in water for not more than 10 min).⁴ For both methods, one or two plants are usually used. In addition to these simple infusions and decoctions, there are the 'root tonics', which are available in stores, social events and markets as dried roots, barks and finished drinks, in a plethora of variations. These root tonics are made using a deep decoction method, in which a large number of roots, barks and leaves obtained from the forest are placed in a large pot, covered with water and boiled for approximately 2.5 h until the water level is halved.^{4,8-12} The origin of this deep decoction method is not known but it is a well-used practice, particularly in Maroon communities. Commercial production of these traditional root tonics has begun due to the great demand and immense economic potential of Jamaica's root tonics, with several processing plants recently being certified and commissioned. There are now increasing numbers of these root tonics on the market.

Throughout the Caribbean, sarsaparilla has often been used to make tonics but the other plants used in those tonics, and the method used to make them, seem to differ. As a first effort towards standardisation of root tonics, and to encourage research into their efficacy and safety, this paper aims to provide a botanical reference to the plants used to make a sample of 38 Jamaican root tonics.

Materials and methods

Three methods were used to determine the nature of Jamaican root tonics and how similar or different they were to other Caribbean tonics:

- 1 *Surveys of Folk medicine*: TRAMIL (Program of Applied Research to Popular Medicine in the Caribbean*) is 'an investigative project applied to the popular traditional medicine of Haiti, Dominican Republic and of other Caribbean countries'.^{13,14} A modified TRAMIL questionnaire¹⁵ was used to gather information on the use of medicinal plants in Jamaica for the treatment or prophylaxis of illness, details of plant parts used, source of plant material, preparation method, herb combinations, dosages, reasons for use, source of knowledge, contraindications and any side-effects. The medicinal, ethnobotanical and agricultural outputs from the TRAMIL questionnaires are reported elsewhere¹⁶ and only information gathered on root tonics is presented here. For the purpose of this study, tonics are defined as home remedies prepared from plants which are used not for a specific illness but to build 'strength' and vitality as a wellness or preventative measure.

The surveys comprised 83 face-to-face questionnaires (41% of households) in Charles Town, the parish of Portland, and 52 questionnaires in Moore Town, in the Trelawny parish. The number of households surveyed in each location was established in proportion to the size of the location. Maps, population data and survey guidelines were sourced through the Statistical Institute of Jamaica. Respondent anonymity was maintained by ensuring that no names, addresses, family histories or other details that might identify an

*There have been various interpretations of the TRAMIL acronym in the literature, most prominently: **T**raditional **M**edicine in the (Caribbean) **I**slands and **T**raditional **M**edicine **I**n **L**ands bordering the Caribbean Sea, but also **T**raditional **M**edicine in/for the **I**slands. It is important to emphasise that the geographical area covered by the programme incorporates large areas of the mainland surrounding the Caribbean basin, including Colombia, Costa Rica, Honduras, Mexico and Venezuela.

individual were recorded; this was in line with the University of the West Indies' ethical guidelines.

In administering these questionnaires, we found there were preventative medicines (tonics) used also, so further information was gathered in informal interviews as to the plant(s) used and how these tonics were made. In 2007, 16 questionnaires were also administered to herbal vendors through informal interviews conducted by pharmacist students at the University of Technology, Kingston 6, St Andrew, being guided by the author of this paper. Four markets were surveyed, including the Coronation (Kingston), Linstead (St Catherine), Charles Gordon (Montego Bay) and Morant Bay (St Thomas) markets. Information was gathered from the 16 herbal vendors on the name of the herbs being sold, indications, part sold, preparation, dose, demand for the product, availability, price per unit and any side-effect known. Only information on the plants being sold for tonics in the market is presented here.

- 2 *Analysis of Jamaican root tonics:* Thirty-eight different root tonic bottles available on the Jamaican market were randomly collected by the Forestry Department, Ministry of Agriculture in Jamaica between 2005 and 2008. All 38 bottles were labelled 'root tonics' or 'root drinks'. Information available on the bottles as to their origin, manufacturer and ingredients were tabulated and the relevant information presented in Tables 1 and 2. These data are presented in aggregate to preserve the identity of any one specific product.
- 3 *Literature search:* A literature search was carried out to identify the nature of similar Caribbean tonics; specifically, the literature was searched for drinks or tonics made in the Caribbean in which native and endemic plants, especially *Smilax* species, were used. The Google search engine and the following search terms were used: sarsaparilla, *Smilax*, root tonics, chainy root, Caribbean. There were no limits on the search. Books on Caribbean folk medicine^{3,4,12,17-21} were also reviewed for information about similar tonics.

Many of the plants identified by respondents on the questionnaires, and on the root tonic labels, had been or were collected from the wild and herbarium samples made. These samples were identified by Patrick Lewis, botanist and herbarium curator at the University of the West Indies (UWI), Mona, and by Keron Campbell, botanist, Natural Museum of Jamaica, Institute of Jamaica. Several reference sources were used to help identify the plant species as required.^{1,22-25} Herbarium reference voucher numbers were also obtained.

Results

Folk medicine and market questionnaires

There was some difficulty gaining information about Jamaican root tonics from the questionnaires. The types of plants used to make the root tonics seemed to differ each time the tonic was made. Indeed, correspondents indicated that during a typical gathering trip, wild-crafters would gather roots and barks of several forest trees; hence, each trip could result in a different collection of plants. Nevertheless, correspondents knew which plants they were looking for. Both Maroon and non-Maroon men living in the forested areas of the Cockpit Country and Portland were familiar with the making of root tonics. The questionnaires indicated that the making of root tonics was the domain of the men, with most being reluctant to share their recipes; so trying to find out which plants were used in Jamaican root tonics from such sources proved to be difficult.

One method for making root tonics was described by more than 20 men from communities such as Charles Town in Portland; also Flagstaff, Bunker's Hill, Maroon Town, Deeside and Quickstep in Trelawny. A gentleman from Deeside willingly described the process. He first collected the roots and barks of various trees and vines along the way back from his farming plot in the forest. The wild-crafter harvested the chainy root rhizomes by chopping off pieces from the wild plant, being careful to leave some for regrowth. Similarly, he would harvest barks and roots of other forest plants carefully to allow them to regrow. These harvested plant parts were then dried and stored for use. To make the tonic, the gentleman chopped the chainy root rhizome, sarsaparilla roots, plant lianas (wist) and barks into small pieces, placed them into a large pot with the dried bush (stem and leaves), covered the plants with water, and boiled the mixture until the water was halved. Malt, honey, brown sugar, molasses and spices (e.g. cinnamon, nutmeg) were added after cooling. This concoction was then bottled and labelled and sold at local events and markets.

Four markets were surveyed in 2007, from which a total of 59 herbs were sold. Several of the plant parts available for sale were sold for 'tonics'. These included: all man strength stem and root, bastard cedar bark, black wist stem and root, blood wist stem, breadnut bark, leaf and seed, chainy root stem and rhizome, cocky wist stem, five man strength stem, gum arabic latex, icing glass latex, irish moss leaf, man wist stem, medina leaf and stem, milk wist stem, nerve wist stem, noni fruit, puran bark (white and red), ramoon leaf, sarsaparilla root and whole plant (including the root), strong back root, strong back whole plant (including the root), water wist stem and root.



Figure 1 Root tonics available in the Jamaican marketplace.

Root tonic bottles

Altogether, 38 'root tonics' sold in Jamaica were obtained – examples of these tonics are illustrated in Figure 1. Some of these tonics were made in regulated and certified processing factories; others were probably made by single proprietors, possibly rural forest community members. The claims on the bottles included: 'known by traditional herbalists for generations to ensure proper function of the circulatory, nervous and reproductive systems', 'good for nerves, sexual desires and energy', 'helps blood circulation, cleanses blood', 'strengthens back', 'lowers cholesterol', 'balances digestive disorders', and 'a true energy boost'. A few labels ($n = 5$, 13.2%) stated the bottles contained less than 5% alcohol due to fermentation. Besides the forest plants, brown sugar ($n = 28$, 73.7%), molasses ($n = 16$, 42.1%) and honey ($n = 17$, 44.7%) were the most common additives, with glucose ($n = 3$, 7.9%), cane juice ($n = 2$, 5.3%), spices ($n = 1$, 2.6%), basic herbs ($n = 1$) and caramel colouring ($n = 1$) being less common. In a few bottles, the following were added: approved flavourings ($n = 1$), goldenseal ($n = 1$), gum arabic ($n = 2$), brewer's leaf ($n = 1$) and sodium metabisulphite ($n = 1$); which suggests that the majority of these root tonics did not include chemical preservatives.

Of the 38 root tonics reviewed, chainy root was listed as an ingredient on all bottles, and sarsaparilla root in 94.7% (36/38) of the bottles (Table 1). The rhizome of chainy root was used in all tonics and the vine (referred to as chainy wist) in 10.5% (4/38) of the tonics. Other commonly listed plants included strong back (94.6% of tonics), nerve wist (57.9%), ramoon (57.9%), medina (55.3%) and ginger (50.0%). A total of 24 plants were used in 20–100% of these root tonics (Table 1), with various combinations of another 70 plant species making up the balance (Table 2). Between three and 26 plants were used, with an average of 13.3 plants, in each root tonic.

For most of the plants listed, the label often only reported the common name (spelt in various ways), or the scientific name given for the plant was wrong. To ascertain the correct scientific names of the plants, samples of the plants were obtained and given to the UWI herbarium for analysis; the literature was consulted also.^{1,4,8–12,17–26} For the tonic bottles listing 'strong back' as an ingredient, strong back was identified as *Cuphea parsonsia* in 2.6% (1/38) of cases, *Morinda royoc* (also called courage root, yellow root or wisp) in 15.7% (6/38), *Bourreiria oratha* in 18.4% (7/38), and unknown in 57.9% (22/38). It should be noted that *Bourreiria oratha* is not a legitimate plant name (should be *B. ovata* but this is not a common Jamaican plant) and was probably copied in error. Based on interviews with tonic makers, the unknown strong back might be *Desmodium canum*, *M. royoc* or *C. parsonsia*. Indeed man back, in one instance was referred to as *D. canum* (2.6%), another time to *Stylosanthes viscosa* (2.6%) and $n = 9$ unknowns (24.0%). Another problem relates to the use of the common name rosemary, where it was difficult to distinguish between local rosemary (*Croton linearis*) and international rosemary (*Rosmarinus officinalis*), both of which grow in Jamaica. In all, scientific names were found for 77 plants but could not be allocated to 17 plants as they were either not found, or it was unclear which plant species the common name referred to.

On the root tonic labels, it was often unclear which parts of the plants were used. However, the common name given often gave some indication of the parts used. For example, 'wist' refers to the vine with or without leaves that grow above-ground with the stem being either thin and green, or woody and of wide bole (e.g. a liana) (Figure 2a). 'Root', on the other hand, refers to either the actual roots (e.g. sarsaparilla) or the rhizome [e.g. chainy root (Figure 2b)] of the plant. Therefore, nerve wist or wiss, whist, wisp and whisp all refer to the stem and leaves of the same plant.

A few of the plants listed as ingredients in these root tonics do not appear to be grown in Jamaica (e.g. roasted barley, hops, linseed, sassafras, goldenseal and gum arabic), and therefore, their inclusion needs to be monitored if an authentic Jamaican root tonic is to be preserved. All other plants listed in the root tonics were grown in Jamaica.

Literature search

There are several websites of Jamaican processors who sell their root tonics via the Internet; all processors used chainy root in their root tonics (Table 3). According to these websites, the root tonics were organic because the plant materials used to make them were obtained from the unspoiled forests of Jamaica (Table 3). However, there was no indication that such locations were being replanted or farmed, merely reaped from time to time.

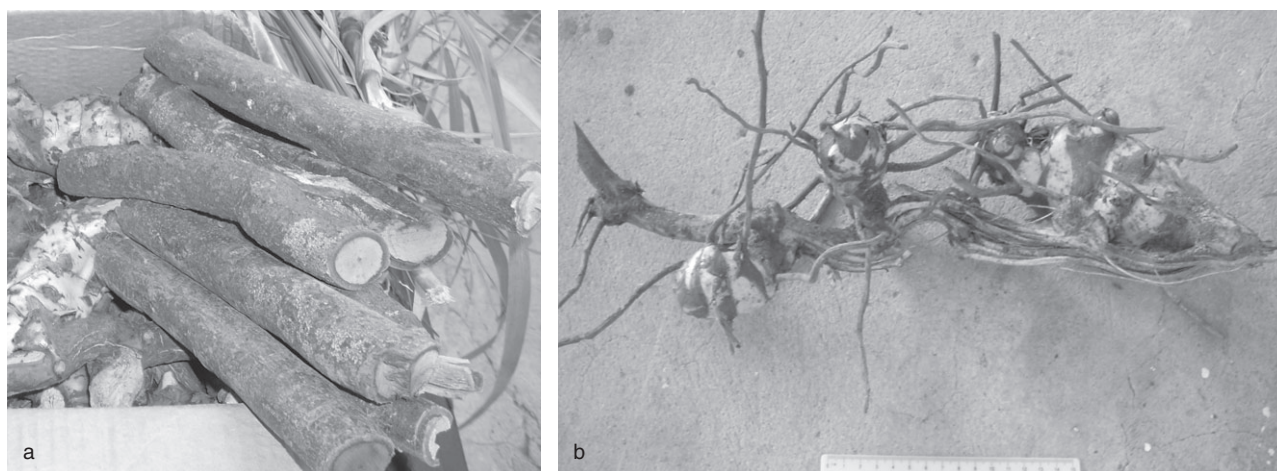


Figure 2 Blood wist (scientific name unresolved) woody stems (a) and *Smilax balbisiana* (chainy root) rhizomes (b).

Table 3 Websites of some Jamaican companies that sell root tonic products^a

Website	Name of company	Name of product (s)
http://www.roxyindustriesja.com	Roxy Industries	Roosta
https://www.reggaetreats.com/Shopcart/products.asp	Reggae Treats	Baba Roots Herbal Drink, Zion Hard Drive Roots Drink, Baba Roots Tonic, Yardy Roots Malta
http://www.stmarymarket.com	St. Mary Market	Angel Brand Jamaican Chainy root
http://www.jamrow.com.jm	Jamrow	Jamaica roots wine
http://www.babaroots.com/	Baba Roots	Baba Roots herbal drink

^aThese are a few of the most prominent websites of companies that either sell one of the 38 collected tonic bottles, or were identified following a search of the Internet for '*Smilax*', 'Jamaica' and 'root tonic drinks'.

The Internet search came up with at least 30 Jamaican root tonic variations, which included names such as roosta, mandingo, dragon wild tigerbone, baba roots, pump it up root tonic, and roots ginger-based root tonic (Table 3). The search also identified a kola tonic (secret recipe) from Barbados²⁷ and a lignum vitae tonic from Bahamas, which was used as an aphrodisiac.²⁸ Elsewhere in the Caribbean, tonic meant 'gin and tonic', various combinations of plants, or sarsaparilla. A concoction similar to the Jamaican root tonics was also found.²⁹ This tonic (known as 'mamajuana'), which is made from forest plants located in the Dominican Republic, is reported to have been concocted originally by the Taino Indians on that island; the original inhabitants of the Greater Antilles since 650 AD. The most common plants used in one Santo Domingo tonic, of which up to 16 plants were mentioned, were sarsaparilla, cinnamon, maca root, clove, chew stick, brazilwood and agave.²⁹ It is possible that other Caribbean islands, such as Cuba, may have similar tonics; and whilst multi-herb concoctions have been reported in this region,³⁰ language barriers make such knowledge difficult to obtain.

Discussion

The origin of Jamaican root tonics is obscure. It is not clear if they predate slavery or are a later phenomenon. The literature suggests that root tonics may have originated from Taino Indians.^{4,29} It is possible that the Taino Indians of Jamaica taught the Maroons (originally runaway slaves) how to make root tonics from the barks, plants and roots of the forest. Tonics made from forest plants in the Dominican Republic, such as mamajuana, were also reported to have been concocted by the Taino Indians. Although there appears to be as many variations in making mamajuana as there are in making Jamaican root tonics, there seems to be two common threads: (1) both tonics were originally Taino drinks, and (2) both contain sarsaparilla. However, mamajuana is steeped in alcohol while the Jamaican root tonics are made as deep decoctions (though may contain alcohol as a result of fermentation). Also, since chainy root is a *Smilax* species endemic to Jamaica, this makes the root tonics made in Jamaica, uniquely Jamaican.

Since most of the ingredients in these root tonics grow in Jamaica, it is important that: (1) these varieties

are preserved in the wild and in gene banks, (2) if wild-crafted, the plants are harvested in such a way that regrowth is possible or replaced with a younger plant, (3) scientific studies be conducted to verify efficacy and safety, (4) farming be encouraged based on the use of clean and authenticated planting material, and (5) processing plants be monitored to ensure required standards are met. If these recommendations are addressed, then Jamaican root tonics will continue to be a source of health and wealth to many rural communities of Jamaica, as well as to a larger number of local and overseas consumers.

Although several processors of root tonics exist in Jamaica, there is still a problem regarding the use of multiple common names and the misidentification of plants (i.e. the lack of authentication by herbariums). For example, strong back refers to several quite disparate plants, which is what encouraged the development of this botanical reference. For this reason, the preferred and most widely used common names have been underlined in this paper (in Tables 1 and 2).

The long list of plants used in multi-herbal concoctions (including mamajuana and other *botellas*) in the Dominican Republic includes the use of *Smilax* spp.; however, it is not clear if this plant is used in tonics as well as herbal medicines.²⁹ A paper describing Cuban herbal medicine reads very similar to such papers from Jamaica. It describes the herbal medicine of Eastern Cuba where 65% of the recipes use two to three plants, 22% use four to five plants, and 13% use six to 19 plants, with 170 different species used in the preparation of 199 herbal mixtures for both minor ailments and life-threatening diseases.³⁰ Again, *Smilax* spp. is included in the list of herbs, but it is not clear if tonics are made from this plant.

Conclusion

The Caribbean is replete with medicinal plants,^{2–5,8–14,16–21,26–32} but the use of forest plant species as listed in Tables 1 and 2, especially the endemic chainy root and wist (*Smilax balbisiana*), to make 'root tonics' by a deep decoction method, seems to be a Jamaican invention; although, there are similar tonics made elsewhere in the Caribbean. Further work is needed to identify all forest plants used in these tonics, and to provide a visual guide to these plants; this will allow for better labelling and therefore better acceptance in the marketplace. Allowing for variation, while ensuring efficacy and safety, will be a challenge; nevertheless, it is clear that the first step has been taken. We now have the beginnings of a botanical reference backed by vouchered herbarium samples. We also have most of these plants growing in our gene bank collection¹⁶ and have begun multiplying the most important ones by tissue culture (e.g. chainy root, sarsaparilla

and ginger) or by cuttings (e.g. strong back and medina)^{33–34} in preparation for scientific studies, including clinical trials; this will help to validate these traditional folk root tonics.

Conflict of interest None declared.

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Sylvia A Mitchell, PhD, Lecturer in Biotechnology, Group leader of the Medicinal Plant Research Group, The Biotechnology Centre, 2 St John's Close, Faculty of Pure and Applied Sciences, University of the West Indies, Mona Campus, St Andrew, Kingston 7, JMAAW15, Jamaica.
E-mail: sylvia.mitchell@uwimona.edu.jm
